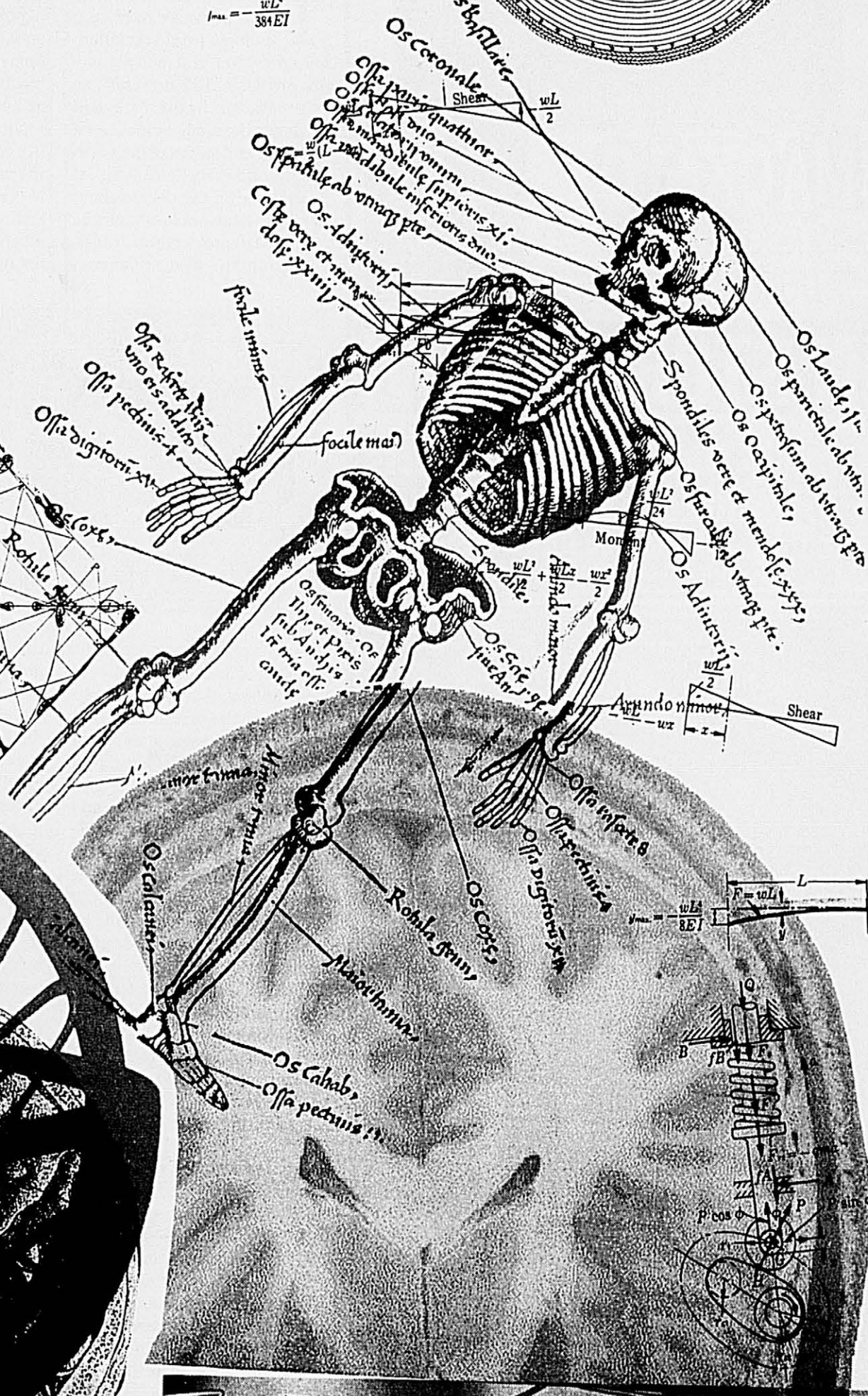
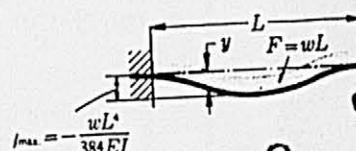
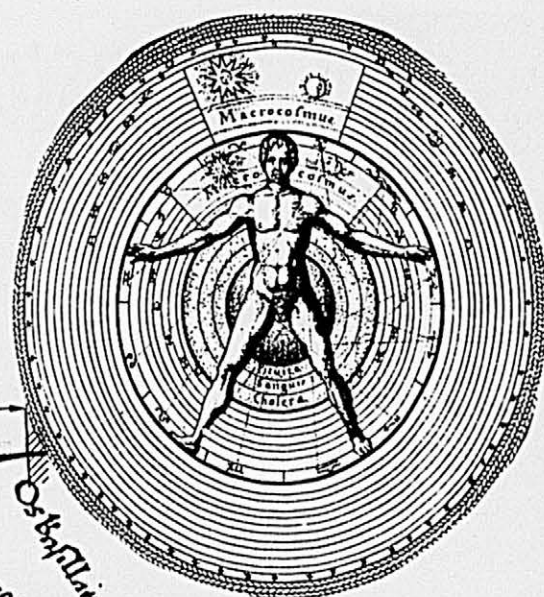


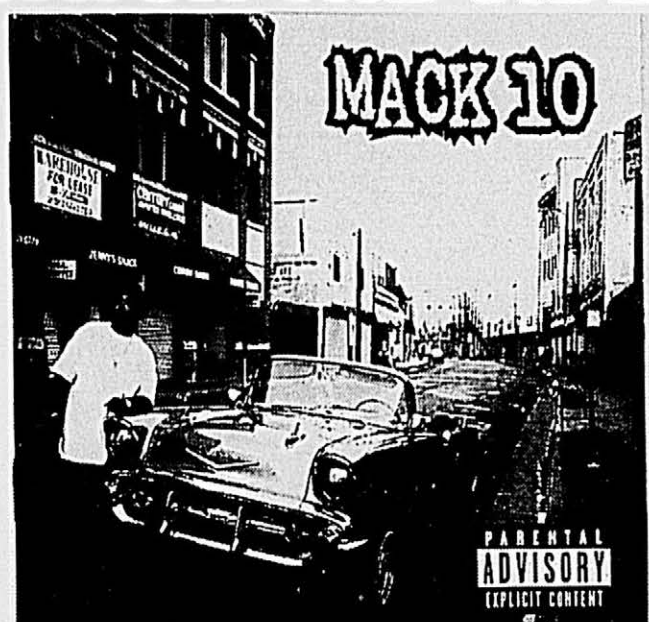


$$\begin{aligned} 0 < x < a: \\ V_x &= -F, \\ M_x &= -Fx. \\ a < x < a + b: \\ M &= M_{\max.} \\ &= Fa. \\ y_{\text{def.}} &= \frac{Fab}{8EI} \end{aligned}$$





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# Democratizing Biotechnology

## Carving out space for debate

by Ian Slotin

The application of many new advances in biotechnology, from revolutionary agricultural and food production methods, to an increased role of genetics in health care, will challenge the fundamental moral structure and values of Canadian society. And every Canadian must be involved in the debate about how these advances should be regulated to protect those values.

During the past summer, I

For example, we may be looking to achieve the benefits of increased health, sustainable development, or the preservation of biodiversity. On the other hand, advances in our ability to manipulate genetics leads to pressing concerns about the limits to the protection of a person's right to privacy. For instance, if genetic testing for incurable disorders is acceptable, should employers and insurance companies be given access to the results of those tests?

Decision-making on these issues, since they have such profound and wide ranging social ramifications, cannot be restricted to government organizations, polarized interest groups, and so-called ethical experts.

At present, there is no institutionalized mechanism in Canada for public discussion on how biotechnology should be developed, even though it is clear that the public is concerned about its possible ramifications. A 1993 survey conducted by Decima Research indicated that while citizens generally believe that biotechnology could potentially offer benefits to society, like improved medical treatments and increased food production, two thirds of the public felt that biotechnology had the potential to pose serious harm to society, especially in the forms of social and ethical abuses. Consumer groups like the Consumers Association of Canada (CAC) which claim to represent consumer interests at large, have expressed much concern over not only the lack of public consultation in biotechnology policy, but also over the lack of a uniform and fair regulatory process for biotechnology products. Recently, the CAC was one of the groups that lobbied successfully against the introduction of a milk product obtained from cows which had been injected with a growth hormone

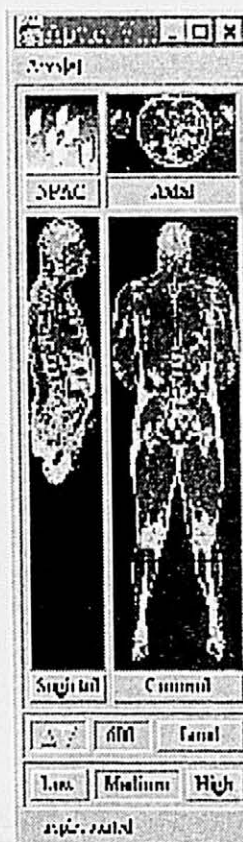
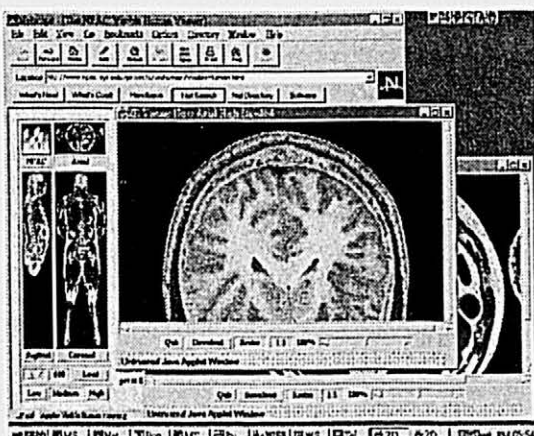
(called BST) to increase milk production, on the grounds that there had not been adequate public consultation.

Furthermore, many of the technologies are so new that there are still no laws or regulations governing them. This is especially true in the case of new reproductive technologies. For example, there are no regulations or standards concerning one of the newest procedures known as pre-implantation genetic diagnosis, a process where genetic testing is used to sift out embryos created *in vitro* that contain genetic defects before they are implanted. Clearly, there are ethical dilemmas about whether this procedure should be allowed, and if so, what kinds of genetic tests are permissible. Would it be wrong, for example, to use this procedure for sex selection? A case might be made for the permissibility of discarding embryos with serious defects and which would not survive for very long after birth, but can an embryo also be discarded if it is determined that the person will develop heart disease or cancer much later in life? Finally, if there is a distinction between these two situations, where should the line be drawn? Issues like these must

be debated in a legitimate public forum so that effective regulations and policies can be developed that reflect actual societal concerns.

It is clear that any commission created to provide such a forum must be at arm's length from government and industry and should report directly to the Prime Minister. It should be composed of representatives from the public at large, from government and industry, and from the environmental, academic and ethical communities, and should have a mandate to examine the

potential risks of emerging technologies, to consider the ethical implications of such advances, and be capable of shaping public policy through a legitimate process of public discussion and participation.





# comment

It is reasonable to expect very small things made up of middle things and peripheral things, which may or may not be in certain places.

by Noémi Tousignant

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### editorial offices:

3480 McTavish St., Montréal, QC, room B-03, H3A 1X9  
business and advertising office:  
3480 McTavish St., Montréal, QC, room B-17, H3A 1X9  
email:  
daily@generation.net

### editorial:

(514)-398-6784

### business/advertising:

(514)-398-6790

fax:  
(514)-398-8318

### business manager:

Marian Schrier

### assistant business manager:

Jo-Anne Pickel

### advertising management:

Leily Mallo, Boris Shedor

### advertising layout and design:

Mark Brooker

### contributors:

Louigi Addario-Berry, Nicholas Delerue, Marianne  
Lynch, Alex Mrkich, Zachary Schwartz, Ian Slotin,  
Netami Stuart, Claude Théoret, Beverly Swamp,  
"Matthew Watkins"

### co-ordinating editor:

Sonia Verma

### co-ordinating news editor:

Mark Ratner

### co-ordinating culture editor:

Noémi Tousignant

### news editors:

Maggie Gilmour, Keri Kosuri

### culture editors:

Jessica Lim, Julien Lapointe

### features editor:

-

### special issue

coordinated by:

Noémi Tousignant

### cover by:

Noémi Tousignant

### unreasonable

demands made by:

Noémi Tousignant

### daily francs:

Magali Boister

### photo editors:

Lori Braun, -

Paul Reeve, -

### office co-ordinator:

Samantha Murphy

### project co-ordinator:

Andrea Mason

### online editor:

Robin Perelle

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## "Newton's not an atheist?"

### Science and the value of history

by "Matthew Watkins"

Valentin Boss is a Professor of History who also sits on the committee for the History and Philosophy of Science program. The *Daily* reached him to discuss the possibility of a fully historicized science and what implications this could have for science's relationship, or lack thereof, to the humanities.

**Daily:** Are there reasons for attempting, as some have done in the past, to erect a bridge between science and the humanities?

**Boss:** Of course we should attempt a bridge between science and the humanities. I don't think we can think of ourselves as being properly speaking educated today unless we know something about DNA, or about the revolution going on in biology, for example. Indeed, I think if Milton were rewriting *Paradise Regained* today, when he refers to the Immaculate Conception I'm sure he'd make some sort of crack about DNA. After all, at the time he was writing he was fully familiar with what was going on. He had met Galileo and the rest of it.

I think this is even more true today. You cannot think of yourself as being cultivated unless you have some knowledge of science. The only trouble is that this is not always reciprocated by scientists themselves. Scientists who don't have their feet firmly planted in

the humanities don't have time to find out what the rise of science involves. A colleague of mine here in the Physics department was absolutely shocked to discover that Newton was not an atheist. When told that, in fact, Newton was a profoundly religious man, this colleague said that he simply could not believe this. The problem being, of course, that for scientific discovery, research and so on, you don't necessarily need a knowledge of how science developed. Whereas in the humanities we still have an approach that is not based quite on the same procedure.

**Daily:** How has science, in terms of its funding, weathered the end of the Cold War, which in the past had provided an excellent justification for society's support of science?

**Boss:** I don't think, in an era of big science, that you can get society to support science, unless science is committed to some sort of moral imperative that society as a whole supports. It was possible during the Cold War to get the public, at least in the West, to make giant sacrifices for science because there was a purpose to what it was doing. But now that such purpose appears to be lacking, it would appear that the kind of things which kept the Victorians happy - an emphasis on

progress, on the improvement of society - that's no longer enough. There is a feeling that science itself has become, for some people in any case, a rip-off.

Again and again in Congressional hearings, scientists have to come up with good reasons for the enormous budgets that, for example, interstellar flight requires. This is why someone like the late Carl Sagan was shrewd enough to come up with a purpose. The purpose is the search for intelligent life. But it's very curious, once you start reading up about this, that this in fact first became an issue in the seventeenth century at the height of the Scientific Revolution when people started talking about aliens, something that was popularized by Voltaire. At that time, it was an intriguing question, and it is today an intriguing question and I think scientists will have to do something far more exciting than producing worms from Mars.

**Daily:** What importance should we give to the study of the history of science, something which is not overly present in the curricula of modern science students?

**Boss:** You would have to go back to the beginning of the Scientific Revolution to understand why it's important. You will recall that to begin with there was no schism between natural philoso-

phy, as it was called, and the church. One of the great tragedies, as many believe, is that this schism occurred. According to Arthur Koestler [author of *The Sleepwalkers*, a "trespassing" work that attempted to bridge science and the humanities] it didn't have to go this way. He explains it largely in terms of Galileo's somewhat arrogant character.

Now, scientists don't need to be knowledgeable in the history of science to carry on their laboratory experiments. This is self-evident. But since we are going through another revolution of sorts, and we don't quite know how it's going to end, it's very valuable for scientists to know what objections were made earlier to science, and how easily at certain points science could be taken over by totalitarian and authoritarian governments. It happened in the Third Reich, it happened under Stalin, and the moral record of some scientists in the West is by no means clean either. So, I would say again, to return to the moral point, one has to know what kind of experiences natural philosophers, scientists, have gone through, in order to be able to perhaps come up with new reasons, for instance, for supporting science in the future, if this is what we wish to do.

some things  
make sense.

SOME THINGS  
MAKE LESS.



# A basic violation of rights

by Alexander Mrkich

## QUESTIONING THE PRACTICE OF RESEARCH ON ANIMALS

The philosophy behind vivisection, the sacrifice of creatures we regard as 'inferior' beings, differs little from that behind the concentration camp or the slave trader.

—Aga Khan (Prince Sadruddin) (1933)

The philosophy of superiority lies at the heart of our society, for our society is, and has always been, one based on exploitation. And this exploitation has been based on relegating certain lives to duties unwanted by those in control: the use of humans who were not white for manual labour, and humans who were not male used for domestic labour. Animals who are not human were used for raw power and materials, and are now used simply for materials - their bodies.

Yet we have shown progress: White humans can no longer own black humans, female humans now have the same rights as male humans. And while these successes have come with great difficulty, non-human animals still remain effectively without rights.

In these examples, science has been a tool, a method of providing political and economic justifications. This continues today in the case of animal-based research, as many scientists corroborate each other's research to keep their own prestige and salaries. By doing this, they also marginalize legitimate clinical work done by other scientists, all the while ensuring that people keep getting sick to keep the profits in the health care industry high. Ironically, it is the clinical work - identifying the characteristics of healthy and sick people by studying healthy and sick people, not animals, that has provided the advances in health care we have today.

These bring to mind two of the main ethical questions in animal research: whether it is ethical to use animals at all in experiments, and the role of animal researchers in maintaining the medical and drug industries.

The ethical basis for animal research is based on the belief that while the rights of a living being are independent of race or gender, those rights do depend on its species. These arguments state that humans, if necessary, have the right to use non-human animals because

the subjects are 'just' animals. These arguments follow similar lines of justifications to those used by people who forcibly used humans of different races than themselves in experimentation.

In the second World War, Japanese doctors used Chinese POWs and civilians as test subjects in a series of medical experiments, and in one instance they examined frostbite. They removed part of the Chinese prisoners' clothing to expose one of their limbs. The 'subjects' were then forced outside in the dead of winter, the limb doused with water and left out long enough for frostbite to set in. The doctors then attempted various treatments, and through these tests found a new treatment, far more effective than the previous one.

This experiment actually produced a treatment beneficial for humans, and yet was this research right?

The ethical reasoning for the use of animals in research depends on the idea of whether we have a right to use animals at all. The arguments that humans use to justify the use of other animals would clearly no longer be accepted if humans tried to use them within the human species.

The 'scientific' basis for using animals in research is that animals are similar enough to humans for the results to have validity - yet if animals produce results similar to humans, why do other animals not have rights similar to humans?

And are other animals truly similar? As examples, Aspirin kills cats and guinea pigs, but is a pain reliever for humans. Arsenic is relatively harmless to rats, mice and sheep, yet it is lethal to humans. Thalidomide doesn't affect rabbits but causes birth defects in humans.

And what of the research itself? The meat industry now makes its slaughterhouses less stressful for animals about to be killed because stress affects the taste of the animals' flesh. Animals locked in cages suffer terrible stress. If stress affects how an animal tastes, how does it affect how animals react during research? No psychologist or scientist would do a study of humans living in prisons and attempt to apply their findings to humans living in natural circumstances. Yet scientists who do animal research do this with every result. And we know the importance of

diet to health, yet animals in experiments are seldom fed their natural diets, making the results even more invalid.

The Foundation for Biomedical Research claims that animal research is responsible for almost all the medical advancements of the century, and animal researchers often use the argument that thousands or millions more people would have died had it not been for animal experimentation. This disregards the impact of improvements in sanitation, which were proposed by other scientists and which have been the reason

for the vast improvement in life expectancy and reduction in the deaths due to disease. 85% of all vivisection was done after 1950, yet most of the improvement in life expectancy (92%) occurred before 1950.

One of the more common claims made by animal researchers is the development of the polio vaccine. What the medical community never admits is that the polio rate had dropped by over 50% before the introduction of the vaccine. This was because better sanitation and housing, and cleaner water were introduced. The vaccine itself was first isolated (not surprisingly, considering that it is a human disease) with the aid of human tissue cultures, and was only prepared using monkey kidney tissue. We now know that monkey tissue contains a simian virus that has been isolated in human brain tumors; Vaccine producers will not guarantee its safety.

In some ways, it is understandable that the doctors and scientists involved in animal research so vigorously defend it. Animal research is the traditional method of scientific research, and criticizing it criticizes the scientific traditions doctors and scientists feel a part of. And their careers are based on animal research. In the academic world it is necessary to continually produce publishable

results of some kind, and animal research, as the cases of Aspirin and thalidomide show, can be used to prove - or disprove - anything. And what of the dissenters? Life can be tough for people who threaten the careers of the establishment, and so it is much better for a young doctor's future to keep their mouth shut.

Animal rights is considered a controversial issue. And so it is, because the use of animals is one of the basic tenants of our society. But for all those who believe there will always be animals on

which to do research, and for those who despair that the use of animals will never end, it is worth remembering that the emancipation of slaves, women's rights, and civil rights were all at least as controversial as animal rights is now. And for all the same reasons: Granting rights to other members of our society costs power for those who benefit from the denial of those rights, and renders an uncomfortable moral judgment on the silent masses who had previously blinded themselves to the injustice that surrounds them.



### Some things you may not know about research on animals...

There are strict government regulations on using radioactivity in Canada. But when it comes to animal research, the government itself does not make the rules. Instead, in a sort of bottom-up approach, it's a national peer-review committee that's in charge: the Canadian Council on Animal Care (CCAC).

Hoping to represent all Canadians, the Council is composed of "scientists, educators, and delegates from industry and the animal welfare movement". The CCAC sets its own guidelines and evaluates animal use in all universities, government facilities and commercial labs.

But does it have any teeth? Not in a legislative sense.

However, Canada's two biggest granting agencies, the Medical Research Council and the Natural Sciences and Engineering Research Council, are members of the CCAC. So any institution that does not comply with CCAC guidelines will lose its research money from these or any other member organizations.

So if you have your own money, can you do whatever you want? Not in Ontario, Saskatchewan and Alberta. They have legislation that backs up the CCAC's guidelines.

In France, a laboratory which uses animals must apply to the government for a permit. A written and practical test must be taken before getting a license, but anyone in the lab can work on the animals as long as a permit-holder is present.

Britain is even more strict. Individual researchers, whether they are professors, post-docs or summer students, must pass a government test before receiving an animal-use license. The degree of animal handling allowed by law (killing, surgery or just petting) depends on the level of license held.

In Canada, undergraduate students are let loose on rats and dogs with graduate students as supervisors. . . .



# Dolly the sheep

# Dolly the sheep

by Mark Ratner  
by Mark Ratner

Advances in Cloning Rouse Fierce Debate

It was news that shocked the world.

The announcement this spring that a lamb, Dolly, had successfully been cloned, resonated loudly both within the scientific community and the public at large.

However a type of cloning has been going on much before the creation of Dolly.

Scientists, for years, have been able to copy particular human genes by placing DNA into the organism *E. Coli*. Using this process, specific genes can be easily studied. Although they had repeatedly tried, scientists were unable to develop an entire clone of an animal.

Now, however, technology has advanced. In the case of Dolly, the entire DNA

of one lamb was placed into an embryo of another. What was remarkable was that for Dolly, the embryo actually grew and was born as a sheep. The result is that Dolly has an identical DNA to another sheep. In this sense, she is a 'clone.' Both sheep have the same genetic make-up.

However some researchers point out that nature has been producing clones long before Dolly ever ate her first oats. Identical twins both have the same DNA as each other - they are clones of one another.

"The symbolic significance [of Dolly] is greater than the real significance," says Barbara A. Koeing, director of the program on Genetics, Ethics & Society at Stanford University.

There is nothing to cloning that nature is not already able to do.

## Ethical worries

A worry raised by critics is that because scientists have now shown they are able to clone sheep, the technology may next be applied to humans where the potential implications are unknown.

If cloning could be applied to humans, it would mean there could be a baby born with the exact same genes as an adult. Imagine what it would be like if a whole new you were going to be born tomorrow. What type of advice could you give the them to avoid the mistakes that you made over the course of your life?

Cloning would mean that we could choose which people are to be replicated. Might the technology be misapplied to the creation of a 'su-

per  
race' of  
beings?

Consid-  
ering histo-  
ry's many ex-  
amples of geno-  
cide, scientific  
power put in the  
wrong hands is dan-  
gerous. Someone might  
think that it would be a

good idea to  
take a strong  
male with  
blue eyes and  
blonde hair  
and replicate  
him over and  
over. Perhaps  
a so-called

'master race' would then be  
created.

The conception of  
an engineered soci-  
ety, often associ-  
ated with cloning,  
leads to the  
objectification  
of humans,  
and a world  
where hu-  
mans are  
only  
judged by  
virtue of  
their effi-  
ciency in ful-  
filling their  
designed  
functions.

Worries  
such as  
these in-  
volve

United States led to the creation of a report by the National Bioethics Advisory Commission. The report recommended that the current moratorium on human cloning be extended. This means that scientists doing research in this field in the U.S. would not be eligible for federal grants. Additionally, the report stated that there should be a federal law banning human cloning altogether.

## A Brave New World?

In spite of  
concerns over  
cloning, some be-  
lieve that this research  
will essentially benefit  
humans. Having devel-  
oped the technology  
that made Dolly possi-  
ble, Scottish scientist

Ian  
Wilmut  
suggests  
that cloning  
does not have  
to be solely  
viewed in a nega-  
tive framework,  
since it also opens up many posi-  
tive possibilities for humans.

"Cloning will provide for the first  
time, an opportunity for precise ge-  
netic modifications to farm ani-  
mals," he says.

Among other things, Wilmut sug-  
gests that cloning may be

useful in producing organs that  
are transplant ready for humans.  
It is possible to conceive, for ex-  
ample, of a genetically engi-  
neered pig with a human heart.  
This means that if someone were  
in need of a transplant, these hu-  
man genes might lower the  
chances of the organ being re-  
jected as foreign when trans-  
planted.

Cloning would also give farm-  
ers much more control over the  
livestock they breed. They could  
designate a certain chicken, re-  
plicate its DNA and produce hun-  
dreds of identical chickens.

Our knowledge and opinions  
of cloning are somewhat ob-  
scured by the portrayal of clon-  
ing in the media, specifically in  
movies. Films like 1976's *The  
Boys from Brazil* and 1975's *The  
Stepford Wives* both portray clon-  
ing in a negative light.

In 1993's *Jurassic Park*, the  
ability to clone dinosaurs had a  
disastrous outcome for the char-  
acters in the movie. The lesson of  
that film was clear: we should not  
fool around with nature. Other-  
wise, we run the risk of losing  
control of our own technology.

However, when new technolo-  
gies are explored, we travel into  
foreign territory. Great discover-  
ies have al-

ways been  
sought in  
spite of  
fears, and  
by people  
who are  
brave

enough to stand up and challenge  
traditional views. Galileo faced  
the wrath of Spanish inquisition  
because he would not admit that  
the earth was the center of the  
universe.

Without such work, we would  
still believe that the world is flat.

"The symbolic significance  
[of Dolly] is greater than  
the real significance."

- Barbara A. Koeing

## events

### Tuesday, November 11

Concordia Irish Lecture Se-  
ries will sponsor a lecture by Dr.  
Neil Sammells on James Joyce and  
Contemporary Irish Studies. Bath  
Spa University College. 1455 de  
Maisonnette Boulevard, West Hall  
Building, Room H 415. Admission is  
free. Info: Donna Whittaker, 848-  
2435.

### Wednesday, November 12

### Thursday, November 13

Westmount High School is  
having a Book Fair! Many wonder-  
ful books both new and used at a  
reasonable cost. 4350 Ste. Catherine  
Street West, 15h to 20h.

### Friday, November 14

LGBTM is having its Coming Out  
Group in the basement of UTC -

LGBTM's Bisexual Group  
meets in the Women's Union  
(Shatner 423) at 17h30.

Both men and women alike are in-  
vited to join the friendly discussion.

3521 University, corner of  
Milton. Don't be shy to come to  
this group as everyone is in the  
same situation and the group is  
very friendly.

### UPCOMING

### Thursday, November 20

Erika Ritter will be reading  
from *The Hidden Life Of Humans*  
at 19h in the Redpath Museum  
Auditorium, 3420 McTavish  
Street. Tickets are \$2.00 and are  
available at the McGill University  
Bookstore. Info: 398-8352.





# Parodying Discourse

by Marianne Lynch

In the spring of 1996, *Social Text*, a postmodernist academic journal, published a special double issue devoted to "the Science Wars." These "wars" are several growing controversies between those who believe in the existence of the physical world and those who believe that it is nothing more than a social construct. For example, one of the latter group would believe that objects such as a desk or a star are nothing more than our own perceptions of them.

In the journal, among contributions from such well-known critics as Sandra Harding and Andrew Ross, there was an article by physicist Alan Sokal entitled "Transgressing the Boundaries: Towards a Transformative Hermeneutics of Quantum Gravity." Unbeknownst to the editors of *Social Text*, Sokal had also submitted another article, "A Physicist Experiments with Cultural Studies," to *Lingua Franca*, a magazine about academic life. This second article revealed that the first was a hoax, a parody of the cultural studies "style" where, in Sokal's words, "[i]ncomprehensibility becomes a virtue."

However, it's not just the style of Sokal's *Social Text* contribution that is a parody. According to Sokal, "the fundamental silliness of [the] article lies... not in its numerous solecisms but in the dubiousness of its central thesis and of the 'reasoning' adduced to support it."

In effect, Sokal felt that passages such as those quoted in the sidebar should be obviously recognizable as parodies. What followed the publication of these two articles was a barrage of newspaper articles, magazine blurbs, editorial responses, radio commentary, journal articles, responses to journal articles, e-mail, and internet rants the likes of which have rarely, if ever, been seen in academia.

Sokal argues that he had specific intentions in writing his hoax. He hoped both to point out the intellectual laziness of the "American academic Left", and to "combat a currently fashionable postmodernist/poststructuralist/social-constructivist discourse — and more generally a penchant for subjectivism." The Sokal Affair also raises issues of authority, authenticity and trust in academic publication; it sheds light on the misconceptions science maintains about cultural studies and vice versa, and fuels the already raging anti-intellectualism of the American right, the "Rush Limbaugh

crowd."

In order to make sense of the Sokal Affair, one has to first try to make sense of Sokal's initial contribution to *Social Text*. It is probably safe to say that *Social Text*'s readership would not immediately recognize a passage such as the one in the sidebar as inherently nonsensical. How, then, does Sokal set up his hoax in such a way as to snare this seemingly sophisticated reader?

Sokal begins his essay with what appears to be a critique of scientists, "and especially physicists," who are either hostile to, or ignorant of, the contributions of cultural criticism to the natural sciences. Sokal also claims that, in light of the twentieth century scientific theories of uncertainty (such as quantum mechanics)

and feminist and post-structuralist critiques of science, it is clear "that physical 'reality', no less than so-

cial 'reality,' is at bottom a social and linguistic construct; that scientific 'knowledge,' far from being objective, reflects and encodes the dominant ideologies and power relations of the culture that produced it; that truth claims of science are inherently theory-laden and self-referential; and consequently, that the discourse of the scientific community, for all its undeniable value, cannot assert a privileged epistemological status with respect to counterhegemonic narratives emanating from dissident or marginalized communities."

Finally, he declares that his goal in this article is to show that "recent developments in quantum gravity...[have] profound implications for the content of a future postmodern and liberatory science."

He is careful to map his approach: first, a review of issues raised by quantum mechanics and general relativity; then a discussion of the new field of quantum gravity; finally, a "comment on the cultural and political implications of these scientific developments."

Having by now established the 'strong'

connection between quantum gravity and current issues in the humanities, Sokal moves from developments in physics to a discussion of a "liberatory postmodern science" which would free humans from the tyranny of 'absolute truth' and 'objective reality'. This 'new' science is characterized by its stress on nonlinearity and disconti-

nuity, and its transcendence of "Cartesian metaphysical distinctions between humankind and Nature, observer and observed, Subject and Object". A postmodern science embraces an ecological epistemological perspective, in attempting to "conceptualize interactions and flows" while focusing on the "dynamic web of relationships between the whole and the part." A breakdown of disciplinary boundaries results, as science borrows a "self-conscious stress on symbolism and representation" from the humanities. Eventually, this liberatory postmodern science would break the monopoly of the "self-perpetrating secular priesthood of credentialed 'scientist'" in the production of scientific knowledge.

In order to achieve this, Sokal insists on a fundamental restructuring of "the content of science...the institutional loci in which scientific labour takes place...and... the reward system that pushes scientists to become, often against their better instincts, the hired guns of capitalists and the military." Such a change would also involve reforms in the teaching of science and mathematics, so that it is "enriched by incorporating the insights of feminist, queer, multiculturalist, and ecological critiques."

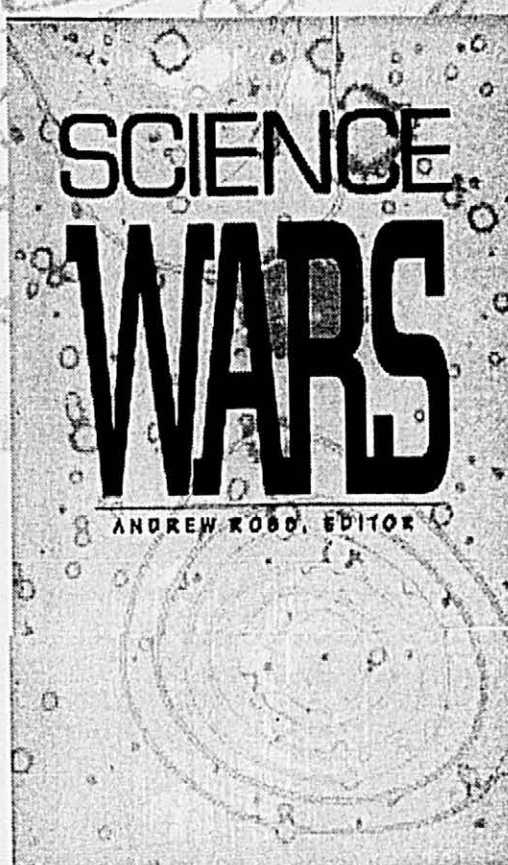
Eventually the language of these disciplines would need to be revised to take into account multidimensional and nonlinear logic, fuzzy systems theory, catastrophe theory, and chaos theory. Sokal

closes by declaring the future of a liberatory science and an emancipatory mathematics to be a present but hazy vision, blurred by "our present intellectual blinders," but he is hopeful that nonlinear, fuzzy and chaotic branches will somehow strengthen the ailing tree of science.

At what points should the alarms have gone off in the mind of the average reader? In Sokal's opinion, the first sign of the nonsense to follow is his declaration, early in the article, that the existence of the external world is dogmatic. In his revelation of the hoax, he counters "Is it now dogma in Cultural Studies that there exists no external world?" It's important to consider the aspects of his article which Sokal found to be most obviously ridiculous, for while many of his self-criticisms

in the second article make refreshing sense, he does not consider alternative interpretations of his statements. For example, it is certainly possible to interpret the passage that Sokal refers to here as questioning, not the existence of an external world, but its capacity to be "encoded" and known objectively by humans; the issue would then be one of language and its mediatory role in the production of knowledge.

Sokal then flippantly declares that anyone who actually believes that physical reality is simply a social and linguistic convention should "try transgressing those conventions from the windows of my apartment... on the twenty-first floor." Again, however, he does not acknowledge in this passage the very fact of placing the word 'reality' in quotation marks seems to suggest our construction and invention of reality rather than the tangible reality of hard pavement. Given that the area of physics he goes on to discuss is concerned with quantities on the scale of  $10^{-33}$  centimeters, it is difficult to see how such a minute and invisible 'reality' can be anything but a construction, of an inevitably linguistic nature, developed from scientific evidence. Sokal wonders at the editors' acceptance of "my implication that the search for truth in science must be subordinated to a political agenda;" he does





# The dirty laundry of the Sokal affair

not consider, it seems, that the editors may well believe that science is already subordinated to a political agenda.

When news of Sokal's hoax first became public, reactions were generally gleeful. The New York Times Wire Service carried the report that "Sokal captured the whole royal court [of cultural studies] parading around in naked ignorance and persuaded the palace chroniclers to publish as centrefold." Katha Pollitt, writing in *The Nation*, declared that *Social Text* editor Andrew Ross had been duped by "a hilarious compilation of pomo gibberish, studded with worshipful quotations from all the trendy thinkers." Peter Jones of *The Times* printed a list of key words needed to guarantee acceptance of any article in "the jargon-ridden world of 'cultural studies.'" On a more serious note, Ruth Rosen slammed the "so-called cultural revolutionaries" that Sokal parodies, who "claim to be democratizing thought, but...purposely write in tongues for an initiated elite."

There was also a strong negative reaction to Sokal's methods. MacKenzie

the natural sciences, when in fact is a field that is trying to "come up with a rich explanation of what it means to do [science]." Finally, and most powerfully, Fish accuses Sokal of academic fraud, claiming that "[Sokal has] packaged his deception so as not to be detected except by someone who began with a deep and corrosive attitude of suspicion." He adds that if that attitude had not existed before Sokal's hoax, it necessarily has developed since.

Both critics of and sympathizers of Sokal's agree that one of the most discouraging results of the hoax is the renewal of fire from the conservative right. An example

of the right wing reaction to the affair comes from Rush Limbaugh, who on his radio show ridicules not only *Social Text*'s acceptance of "scientific gobbledegook," but also the "gibberish" that Stanley Fish writes in his attack on Sokal. Linda Seebach supports Sokal's parody from a more moderate point of view, declaring that "the corruption of clear thought and clear language is dangerous...[and] has to be exposed before it can be cleaned up." What exactly entails clear thought or language is unfortunately not (pardon my pun) made clear.

In the fall of 1996, Sokal published an "Afterword" in *Dissent*, in which he reiterates many of his earlier points, and expands on his

accusation of sloppy thinking by examining the work of Sandra Harding and Andrew Ross in particular. Around the time of the publication of this "Afterword," several of his 'victims' made public their views of the Sokal Affair.

In mathematical terms, Derrida's observation relates to the invariance of the Einstein field equation  $G_{\mu\nu} = 8\pi G T_{\mu\nu}$  under non-linear space time diffeomorphisms... The key point is that this invariance group "acts transitively": this means that at any space-time point, if it exists at all, can be transformed into any other. In this way, the infinite-dimensional invariance group erodes the distinction between observer and observed; the p of Euclid and the G of Newton, formerly thought to be constant and universal, are now perceived in their ineluctable historicity; and the putative observer becomes fatally de-centered, disconnected from any epistemic link to a space-time point that can no longer be defined by geometry alone.

- Alan Sokal, "Transgressing the Boundaries," 1996

Bruno Latour simply calls *Social Text* a bad journal for having allowed the hoax to be perpetrated, and then accuses Sokal of portraying French academics as evil drug dealers dispensing "derridium" and "lacanium" to innocent American graduate students. In response to Sokal's claim that discussions of social construction of reality mean nothing to AIDS research or homophobia, Bruce Robbins asks whether it can be denied that homophobia has affected the history of AIDS research, or that profit has influenced research into global warming.

He insists that a social constructionist critique of knowledge is needed in order to show the error in one's accepted "truths" such as that which claim that "women and African Americans were inherently inferior."

According to Stanley Aronowitz Sokal holds an almost religious belief "that proper scientific method filters social and cultural influences in the process of discovering." Aronowitz believes, conversely, that "scientific knowledge is not immune from broad cultural or narrow political influences and its method cannot function as a filter;" furthermore, science needs to acknowledge the "interpretations and consequences" of its discoveries if it is to become "liberatory."

While many other comments and responses have been written on the Sokal Affair, the main issues that were raised by the parody article are clear here: from Sokal's point of view, the cultural studies of science has fallen into a trap of producing meaningless, jargon-filled 'research.' Worse, it has become unable to recognize what was happening to it. More than simply being a problem of rhetoric

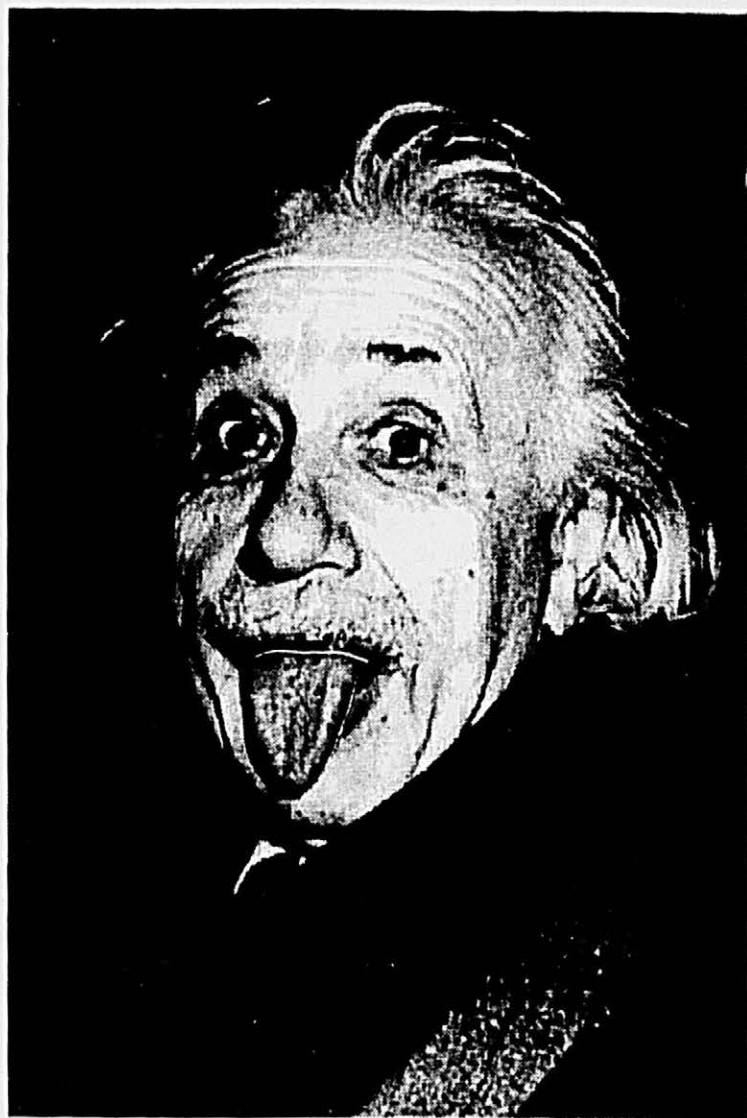
and writing style, Sokal detects a fundamental intellectual weakness in a field where reality is seen as a social construct, objectivity is an outdated impossibility, and vague appeals to authority constitute proof.

On the other hand, those targeted by Sokal were appalled by what they saw as transgressions of trust. They were taken aback by Sokal's inferences that the cultural study of science involved nothing more than self-perpetuating word games. Both sides are, however, able to acknowledge the vast common ground they share. They believe, in the words of Sokal himself, that "non-scientists should have something to say in the decision making processes that define and shape the work of the professional scientific community" and that close attention must be paid to "political and economic issues surrounding science and technology." Nonetheless, their interpretation of this 'common ground' is different.

Sokal sees these issues as affecting only the outcomes of scientific and technological research and thus undermining objectivity. By emphasizing Robbins' blurring of truth with claims of truth and fact with assertion of fact, Sokal is in essence declaring that these two are always separable. It is a position that comes under fire from Aronowitz, who rightly asks about what science "did...not study because of its funding sources," and consequently what

false truths and facts were discovered, and what truths and facts could never be explored. Evelyn Fox Keller raises these same issues in her essay "Critical

Silences in Scientific Discourse." She points out the importance of "the operation of choice in the construction of scientific knowledge." If scientific knowledge is seen as a force in our world as she suggests, then it must be remembered that a force "has not only magnitude but directionality as well." If directionality is admitted then "the possibility of alternative directions [is] within at least within imaginative reach." Sokal's hoax has served many purposes — amusing graduate students, fueling the right's criticism of academia, projecting *Social Text* into a dubious light. It may also, however, have served to make possible the sort of science that Sokal mocks; a 'liberatory' science, developed so it is, as Keller has put it, "adequate to the task of changing the world in different ways," without a sacrifice of objectivity or rigour.



scientists being silly

Work criticizes Sokal's logic while Stanley Fish states that Sokal has misunderstood 'socially constructed' to mean 'not real,' a view that "no-one since Berkeley holds." Fish accuses Sokal of fearing that science studies are in competition with



# On the brain, from the heart

Oliver Sacks romanticizes neurology

by Louigi Addario-Berry

As some of you may remember, neurologist Oliver Sacks came to town about a month and a half ago. He gave a lecture — one of the Beatty Memorial Lecture Series — entitled *Neurology and the Soul*. The lecture was covered in several campus newspapers: most of the articles gave a sort of a play-by-play of the topics he covered in his lecture, with some information about Sacks' upbringing and his journey to North America.

My first exposure to Sacks was through a story from one of his books: *The Man who Mistook his Wife for a Hat*. This book combines case studies of a wide range of mental illnesses, including a man who walked at a 20 degree angle, a pair of twins with a unique facility for calculating prime numbers, and a man stuck in his past — post-W.W.II, to be exact.

The study which caught my eye was the story of a surgeon with a condition called Tourette's Syndrome. Tourette's is a rare disease, affecting around 1 in 50 000 people, and among those affected there is a wide variety of intensities. Tourette's syn-

drome causes those affected to act spasmodically, repeating actions or words at random, often thousands of times in a row. In more serious cases of Tourette's, the afflicted person will often also have a violent streak: in the case of the surgeon, both repetitive action and violence were prevalent in his actions. Actions such as tapping the steering wheel while driving — or, for that matter, the windshield, or his forehead — were commonplace: those affected by Tourette's can literally never sit still.

The violence was most noticeable in the patient's home: he never mistreated his family, but rather his inanimate surroundings. A wall across from his kitchen was covered with holes from when, out of the blue, he would throw knives at it with all his force.

Neither his compulsive actions — tics, as he referred to them — nor his violence extended to the operating room, however. Once he donned his surgeon's gloves, that world occupied his mind. He somehow managed to obtain a level of concentration necessary for even the most delicate of surgery. The same was true

for his hobbies: he flew a plane, and had no difficulty controlling his actions while in flight. Tourette's basically occupied any processing power which was "unused" at any given time.

What captivated my attention upon reading the article was not the case study itself — though I also found that fascinating — but rather, the humanity with which Sacks conveyed the surgeon's story. The story's dialect was not that of a Doctor sipping data to other professionals to be chronicled and catalogued. Rather, his focus was on the man, and the extraordinary will of an individual to overcome what in many cases would have been a crippling disease. Sacks imbued his writing with the essence of the surgeon as a person: he portrayed a living person in his book, and the result read more like a

piece of really good fiction (I mean this in the best possible sense) than like a case study.

I finished reading the story ... and read it again, appreciating every word in the masterpiece Sacks had built. What Sacks has done is more than create a wonderful story: in writing as

science student hoping to hear some of the "inside details" of his work as a neurologist. In that respect, I didn't get what I was hoping for. What Sacks did, however, was equally valuable: he demystified one of the most forbidding fields of science of this day and age. He made neurology exciting, myopia fascinating, and made science... dare I say it... fun. Because science is fun. The fun just gets forgotten amongst jumbles of integrals, matrices, equilibrium constants and arctangents.

Einstein, while he was around, brought physics into the limelight: he made science almost romantic. In my view, Sacks has that same uncanny ability for simplifying the complex, explaining the enigmatic: for putting the fun back into science.

Give one of his books a try. It's well worth the time.

he does, he draws all who read his work into a captivating merger of science and humanity. In doing so, he brings both a step closer to all who read his work or see him speak.

I went to his lecture as a

## How to scam the world

Tell a person there are 300 billion stars in the universe and they'll believe you; tell them a bench has wet paint on it and they'll touch it to be sure

by Claude Théoret

Would you trust a financial analyst who sent you eight straight accurate predictions about a stock's price?

Let's say somebody posing as a financial analyst sends out 32,000 letters with a smart logo extolling the virtues of a stock market modeling program. In half of the letters, they predict a rise in the stock price — in the other half, a decline. Whether the stock price rises or falls, the "analyst" sends follow-up letters only to the 16,000 who received the correct prediction. Of the new letters, 8,000 predict a rise and 8,000 predict a fall. A few more times and 125 people have received eight correct predictions.

If an advisor knowingly does this, it is an illegal act. But it is considered acceptable if performed by publishers of

stock newsletters, or television evangelists or would-be psychics.

The moral of the story: there is always enough random success to convince anyone who isn't informed and wants to believe. And too

**One megaton means one million tons. It only takes one pound of TNT to completely destroy a car. By 1985, the world's nuclear arsenal was equivalent to 10,000 pounds of TNT for every person on earth.**

many want to believe in something or someone who can do the math for them

Why?

While our society has decided that illiteracy is unacceptable, we seem to turn a blind eye to its mathematical counterpart — innumeracy.

Math is just language that we use to describe nature. In the same way that some people can be functionally illiterate, even if they know how to speak and write, one can be functionally innumerate, even if one knows how to count, add and multiply.

It is impossible to understand and communicate complex ideas with only one verb tense and a limited vocabulary. In the same respect, without an adequate set of mathematical tools it is impossible to understand complex phenomena in nature. The same phenomena that make the stock market tick.

Microsoft started with a

tiny bit (by today's standards) of software, and not lots of capital. It serves as a good example that we are moving from a society where capital is power, into a technocracy — a society where information is power. And in this information society, the haves and the have-nots will be divided along the lines of the knowledgeable and the ignorant.

Since more and more of the valued information is of a technical nature, one would think that mathematical and scientific knowledge should be gaining more importance.

But they're not. During the arms race, a country's nuclear arsenal was measured in megatons. One megaton means one million tons. It only takes one pound of TNT to completely destroy a car. By 1985, the world's nuclear arsenal was equivalent to

10,000 pounds of TNT for every person on earth. Those in power could hide behind the term megaton to mask the magnitude of their destructive capabilities.

And the consequences of our societal innumeracy can range from losing money on slot machines and lottery tickets, to convincing the populace that social programs were at the root of our deficit crisis, instead of high interest rates in the eighties.

By wielding numbers — in the arms race — as much as in stock market scams — people in power can control and profit off of the innumerate.

Whether they are elected governments, bond rating agencies or military advisors, we seem glad to abdicate our collective freedom, money and futures instead of doing a bit of math.



# The Physics of Racecars

And why poutine is not found in the bloodstream

by Nicholas Delerue

On October 15, the 1997 Nobel Prize in Chemistry was awarded to Paul D. Boyer and John E. Walker for their elucidation of the mechanism underlying the synthesis of ATP, and to Jens C. Skou, for the first discovery of an ion-transporting enzyme.

Everything we use in our daily life requires energy to function. If you forget to fill your car with gas, you run the risk of being stuck in the middle of the countryside (true story). If you unplug your computer, it will automatically stop (a little advice: save your files first). And even the Ariane 5 spaceship, in all its glorious modernity, needs fuel in order to take off.

Then, what can we say about the most complex and the most evolved engines that exist: living organisms? The answer is obvious: one needs to eat to make one's organism work. Granted, but when an animal eats, the food goes to its stomach, not to its muscle (have you ever seen bits of poutine travelling in the bloodstream?). What does happen, though, is that the food is converted into elements which can travel through the bloodstream and be transported to the individual cells. Once these elements have reached the cells, they are converted and stored under the form of a "combustible," discovered in the late twenties by the German Karl Lohmann, called ATP (Adenosine Triphosphate.)

The ATP molecule is very complicated and its synthesis requires a whole slew of different chemical reactions.

In order to understand more fully how ATP works, Paul D. Boyer of the University of California in Los Angeles used a radioactive tracing method. He replaced some of the atoms in ATP molecules by similar radioactive atoms. He then studied which parts of the cell became radioactive, in order to determine where the atoms had gone.

John E. Walker of Cambridge University in the United Kingdom chose another method to study ATP and the enzyme that makes ATP (ATP synthase). Walker looked at the diffraction pattern made by light sent onto ATP, and in the same way the radiologist takes a picture of our inner structure, he obtained useful information about the ATP structure. These results let Boyer and Walker build a model of how ATP is synthesized. This model has been recently validated by different scientific teams, and has earned them half of the 1997 Nobel prize.

The other half of the Nobel prize goes to Jens C. Skou, of the Aarhus University in Denmark, who studied the difference in concentration between the inside and the outside of

our cells. Just as our car rejects gas through an exhaust pipe, the use of ATP in our cells produces several wastes. Thus it was important to understand the mechanism that leads to the evacuation of these wastes out of our cells, and then recycles them. (Yes, our organism is more efficient than we humans are about waste management!)

The work that has been recognized this year by the Nobel Prize of Chemistry gives us a better understanding of how our cells work and are powered. This gives us hope for a better understanding and treatment for some cells diseases.

## The 1997 Nobel prize in Physics

The 1997 Nobel Prize in Physics was awarded to Steven Chu, Claude Cohen-Tannoudji and William D. Phillips for "development of methods to cool and trap atoms with laser light".

Imagine that you want to study the features of a Formula 1 driver. Of course you can go near the Gilles Villeneuve Ring and look at the cars during the race, but do you think you will see much? Of course not - the cars are going too fast to get a proper look at the face of a race car driver.

The same problem occurs when physicists want to study the atoms at high temperatures. The agitation due to the high temperature is so huge that atoms travel too fast to be observed. At room temperature (298K, or 25°C,) atoms move with an average speed of 4000 km per hour. What can you see at this speed? Even if you cool them to a few Kelvin degrees, you won't see anything. At this temperature the atoms still move at more than 400 km per hour.

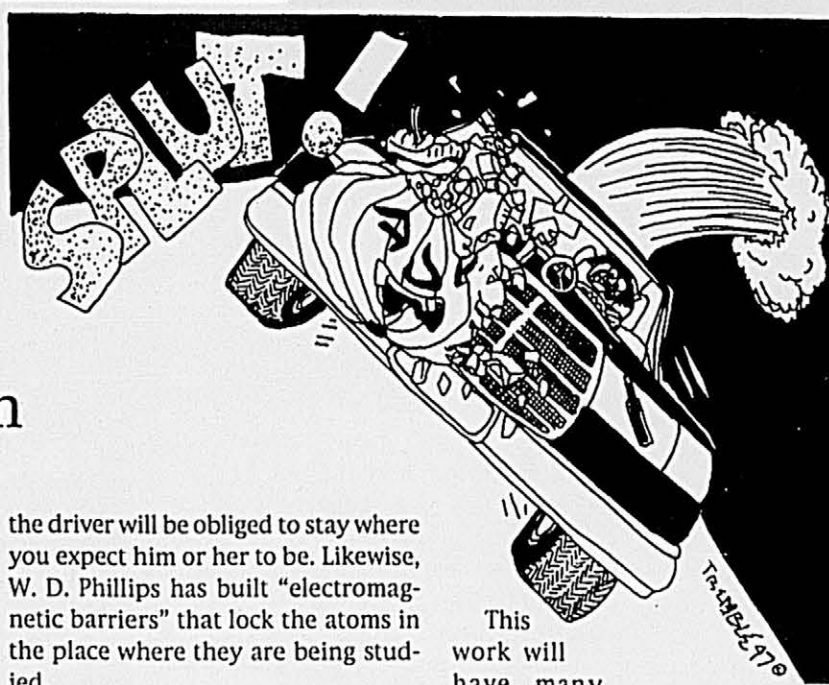
Cooling further? Forget it: just as water vapour becomes liquid water at 100°C and ice at 0°C, all gases freeze at a certain temperature. In this case, atoms are no longer separate, but in clusters (like the cars at the start of a grand prix.)

Steven Chu and his team at the Bell laboratories in Holmdel, New Jersey have used another method. If you throw big heavy pumpkins at a race car driver head-on, each new pumpkin will progressively slow him down, though only minimally. In the same way, by sending 'energy packets' at an atom in the form of photons in a laser beam, Chu was able to slow down the atoms.

But even if you slow it down, the race driver will keep moving and soon leaves the zone in which you are studying him or her. The solution to this problem has been found by William D. Phillips and his team from The Michigan Institute of Technology. If you surround this area with fences,

the driver will be obliged to stay where you expect him or her to be. Likewise, W. D. Phillips has built "electromagnetic barriers" that lock the atoms in the place where they are being studied.

Claude Cohen-Tannoudji and his co-workers of the École Normale Supérieure de Paris (the most prestigious teaching institution in France) have constructed models which allow researchers to surpass the limits of the previous methods, cooling atoms to temperatures as low as a few micro-Kelvins. At this speed, atoms move through only a few centimetres per second. Now that we know how to slow down atoms, their study can start.



This work will have many implications for the study of the properties of the atoms. A better knowledge of these properties will allow the creation of smaller components. In micro-electronics, smaller components mean higher speeds and a lower power consumption, so thanks to the work of the co-laureate of the 1997 Nobel Prize, we may hope for more powerful computers.

## Babes with Beakers

A Brief History of Women in Science

**Marie Curie**

1903 Nobel Laureate in Physics

In recognition of the extraordinary services she has rendered in joint research on the radiation phenomena discovered by Professor Henri Becquerel.

1911 Nobel Laureate in Chemistry

In recognition of her work in the advancement of chemistry by the discovery of the elements radium and polonium, by the isolation of radium and the study of the nature and compounds of this remarkable element.

**Irene Joliot-Curie**

1935 Nobel Laureate in Chemistry

In recognition of her synthesis of new radioactive elements.

Irene abhorred the frivolous. Her childhood was dedicated to her studies, her adulthood to her research. For relaxation she liked to hike in the mountains, ski, or play tennis. Irene followed her mother's pattern of dressing simply. One gets the sense that she resented wasting any resources of funds, energy, or time on fashion.

Her education was interrupted by World War I. In 1916, Irene left the Sorbonne to assist her Marie Curie with the fleet of mobile x-ray facilities that helped to save the lives of so many wounded soldiers. Irene extended this work by directing the development of diagnostic x-ray facilities in military hospitals in France and Belgium. After the war, she received a Military Medal for this endeavour.

**Maria Goeppert-Mayer**

1963 Nobel Laureate in Physics

For discoveries concerning nuclear shell structure. During this period Mayer publicly encouraged young women to pursue careers in the sciences.

**Dorothy Crowfoot Hodgkin**

1964 Nobel Laureate in Chemistry

For her determinations by X-ray techniques of the structures of important biochemical substances.

In 1934, she crystallized and X-ray photographed insulin. This was only the second protein to be studied and was a major achievement for Dr. Hodgkin because she completed the crystallization and photographs on her own.

While working at Oxford University, she was barred from research meetings of the faculty chemistry club because she was a woman. Later, her talent and perseverance prevailed and she won over the students and faculty members.

Their guests included the powerful, the famous, revolutionaries and refugees, as well as their own countless students, colleagues, and friends. To her students and colleagues she "was a teacher, mother, friend, and guide all rolled into one."

Dr. Hodgkin has always been a champion of world peace and disarmament. She was a strong supporter of national liberation struggles, proponent of the development of third world countries, and signed on with several organizations that admitted Communist party members.





# Praxis and Motion

*Idlymovable* explores thought and artistry

Despite obvious differences in their conceptual parentage, the wooden wave and the mechanical random text generator get along just fine. The two are artworks sharing a space with other pieces in a show by artists Justin Stephens and Tim van Wijk at gallerie VAV this week.

In *Idlymovable*, van Wijk and Stephens have assembled a show which creates a dialogue not only between different styles and processes but between different understandings of the implications of art both for the artist and the viewer. With so many interlocutors, you'd think it was more of an argument than a dialogue, however a pleasant balance and counterpoint is maintained.

Tim van Wijk's work is an exploration of the process of thinking about the process of thinking. One of his two major pieces in the show, *the Analogue Brain* is a multimedia portrayal of the human brain as a piece of machinery. Van Wijk takes a very literal approach to questions of human anatomy, machinery and the mechanical aspects of our thought processes. *The Analogue Brain* consists of silk-screened images on paper and Plexiglas, which make up a hand-printed book. While reading the pages of the book in sequence, the viewer must move the pages around to form an image on the reverse side. This process of reading and sorting text and image engages the audience to relate movement to the mechanics of thought. The text is about Hehnerihogh, a machinist who may, or may not have had a brain operation.

The dichotomy of process and concept threads van Wijk's art. He himself states that the process of actually producing his art is a fundamental part of the conceptual framework. In using silk-screen, van Wijk has taken on a time-consuming and involved technique that requires technical skills, practice and a lot of patience. He believes that craftsmanship and technique can be applied to thought as well as to production. Because of the media he has used to produce the *analog brain*, the piece has an archaic or antique quality that recalls the beginning of the industrial age. Rather than indicating a lack of subtlety, the literal relationship between concept and image in *analog brain* is a necessary aspect of its antique and practical quality.

Van Wijk's second piece also deals with thought to a certain extent, but is more a celebration of craftsmanship and a statement about the capabilities and dynamics inherent in non-electronic, non-digital science. The random text generator is operated by turning a crank which sets an intricate network of wooden gears in motion, and eventually the machine feeds out a strip of paper with random block-printed letters on it. In this piece it is obvious that the artist was enjoying himself with gavelock and jemmy, pulley and parbuckle, wheel and axle.

In contrast to van Wijk's pieces, which make no secret of their subject matter and demand that the viewer ponder the praxis of thought, Justin Stephens' works are subtle and ambiguous. Stephens has produced a series of paintings and a rolling wooden wave that invite the viewer to form a confi-

dent opinion and openly like or dislike them, no matter how the opinion is informed. In this case, the artist is less concerned with having the viewer think about given subject matter than with the various ways in which art is received and conceived by different people. Stephens acknowledges that his paintings are not going to be pretty to everyone that sees them. Because of the media that he uses, he would rather have people feel a connection to them, and through that connection feel that their opinion is as valid as anyone else's.

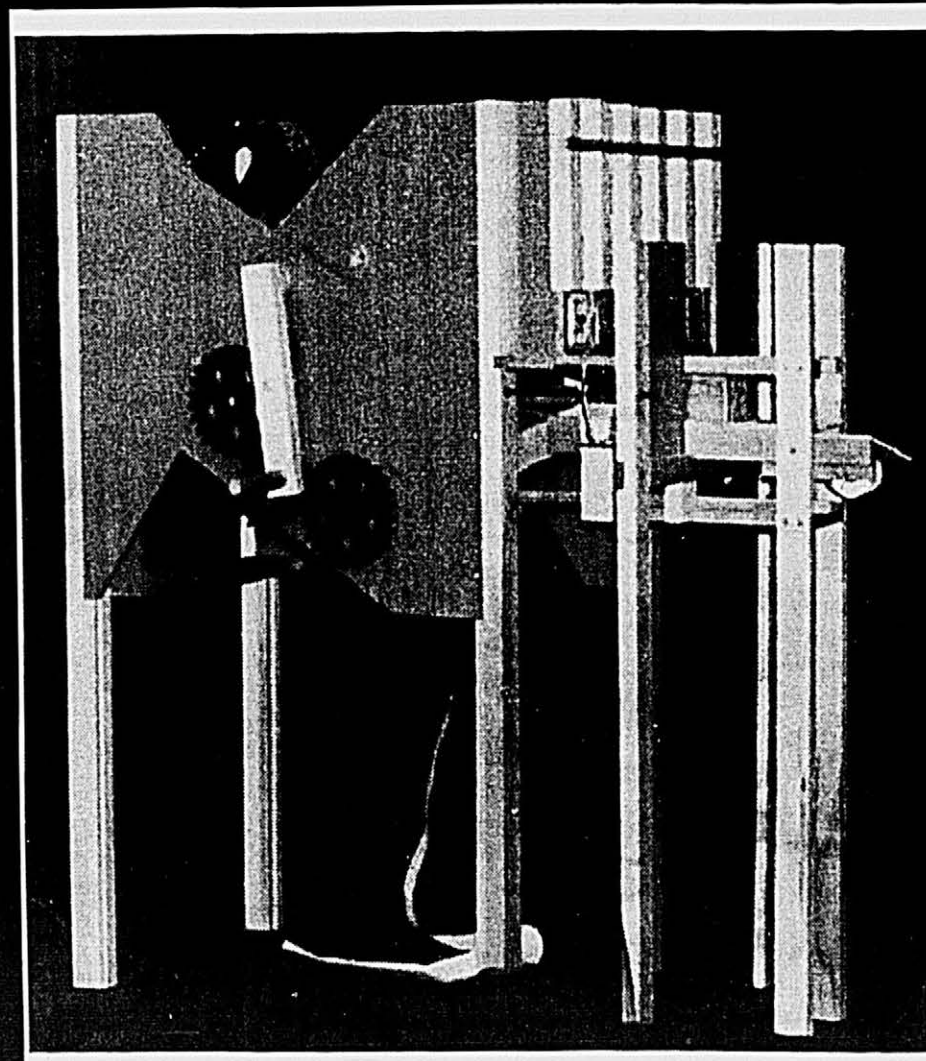
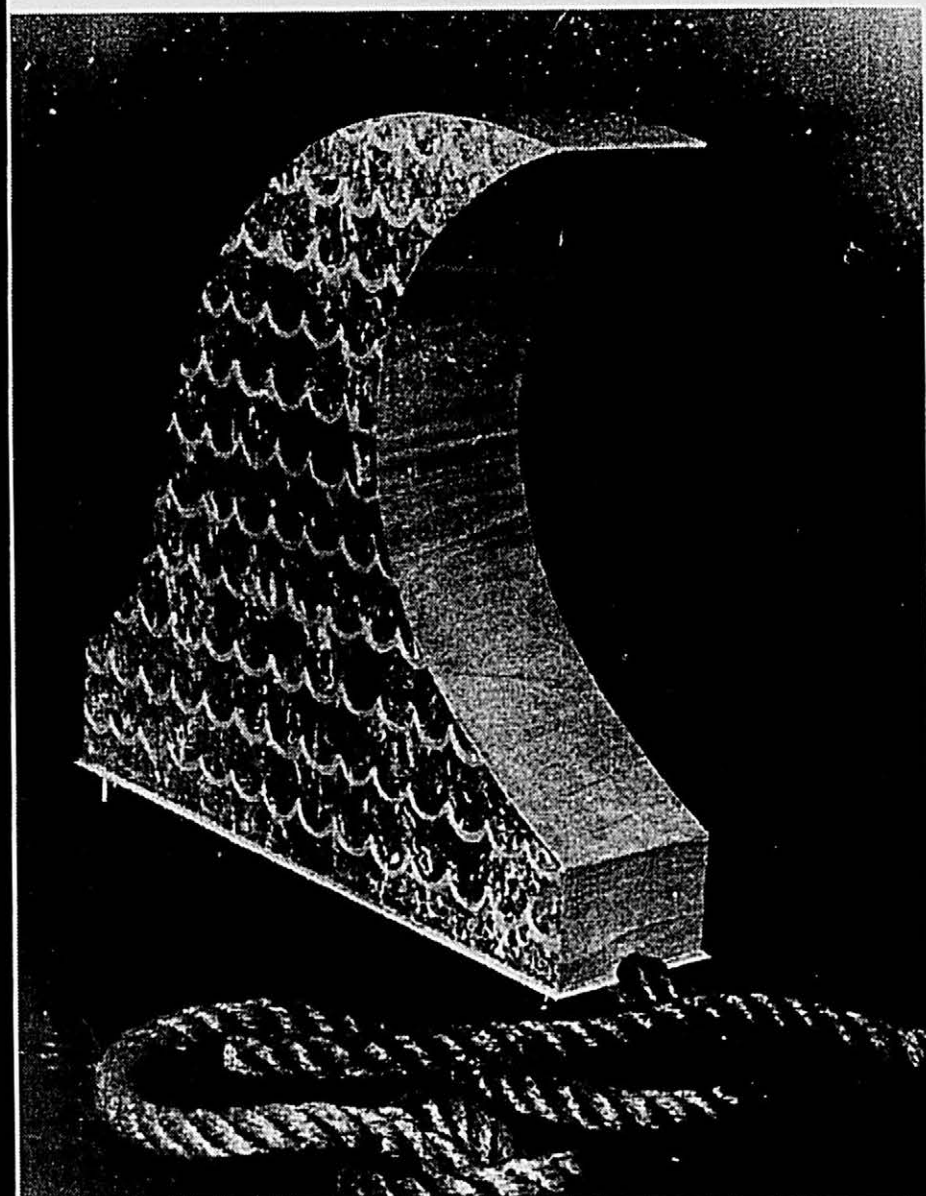
Most of Stephens' paintings are made on tea towels from the dollar store stretched over canvas stretchers and then varnished, thus giving the viewer an initial impression that they are modernist. In fact, by creating this deception, Stephens reveals his influences, alluding to Dadaists and Surrealists, who often slightly altered the art of their contemporaries with a similar effect. His art displays his awareness of pretension in the artistic community. He acknowledges that such pretension derives partly from an intellectual background in which he himself participates, and which is exposed in his art as well. Justin Stephens' work meditates on the relationship of art to itself; on irony and silliness; on interpretation and humour.

Like van Wijk, Stephens is very aware of the materials he uses and the implications of how they are assembled. He understands that the amount of care that he puts into his art and the apparent perfection or imperfection of the finished product are going to be interpreted by viewers.

Acknowledging that a main concept in Stephens' work for this show is the differences in interpretation by a diverse audience, I would like to offer my own opinion about the appearance of his works. To me, although his paintings do not contain pretty subject matter, they are simple and clear and beautiful. Also, having seen many of his other works, the subtle humour in a rolling wooden wave on wheels and varnished tea towels is more apparent than it might be to someone not familiar with the artist's sense of humour.

*Idlymovable* implies motion and stasis, a kind of kinetic energy that comes from moving objects like a wave and a hand-cranked machine, which, while they are in the gallery, are sitting stock-still. Although the artists had wildly different ideas in mind when preparing for the show, they insist that their works "get along very well and like each other very much". This is partly because the pieces were born at the same time and partly a case of opposites attracting. Van Wijk's intricacy and meticulousness is not without parallel in Stephens' work but the outcomes are very different. The balance between Stephens' cool paintings and van Wijk's antique prints is thought-provoking and above all very fun to look at.

*Idlymovable* is at the Gallerie VAV at 1395 René-Levesques O. from November 9-15. The vernissage is at 19h00 on Tuesday, November 11.





## WHO SAYS THERE ARE NO FREE LUNCHES!

WE INVITE YOU TO A  
SPECIAL STUDENTS SUNDAY, NOV. 16  
11 A.M. FOLLOWED BY AN INFORMAL LUNCH  
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JAN. 11  
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## Société de Publications du Daily Assemblée Générale Annuelle (AGA)

Mardi le 2 Décembre, 1997

16h00 à 18h00

Pavillon Étudiant 3480 McTavish  
(Shatner B9/B10)

L'élection des directeurs de la Société de Publications  
du Daily pour 1998-99 (Conseil d'Administration)  
prendra place à l'AGA

Soumission de candidature: du 12 novembre au 25 novembre.

Les formulaires de candidature seront disponibles dans les bureaux  
du McGill Daily (Local B07 et B03) du 12 novembre au 25 novembre.

Les Candidats seront dévoilés entre le 25 novembre et le 2 décembre.

Pour plus d'informations, contactez  
Suzanne Williams (Directrice Générale des Élections)  
Société de Publications du Daily,  
au 398-6790 ou 398-6784



## imagine Israel this summer

- Summer trips ✓
- Kibbutz Experiences ✓
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- University Options ✓
- Internships ✓
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...find out more  
Thursday November 13  
11:00-2:30  
Union, rm 108  
Info: Ruthie  
345-6449



## daily classifieds

Ads may be placed through the Daily  
Business Office, Room B-07, University  
Centre, 9h00-14h00. Deadline is 14h00,  
two working days prior to publication.  
McGill Students & Staff (with valid ID):  
\$4.65 per day, 3 or more consecutive  
days, \$4.10 per day. General Public:  
\$5.90 per day, or \$4.95 per day for 3 or  
more consecutive days. Extra charges  
may apply, prices include applicable GST  
or PST. Full payment should accompany  
your advertising order and may be made  
in cash or by personal cheque (for  
amounts over \$20 only). For more infor-  
mation, please visit our office or call 398-  
6790. WE CANNOT TAKE CLASSIFIED  
ADS OVER THE PHONE. PLEASE CHECK  
YOUR AD CAREFULLY WHEN IT APPEARS  
IN THE PAPER. The Daily assumes no  
financial responsibility for errors, or dam-  
ages due to errors. Ad will re-appear free  
of charge upon request if information is  
incorrect due to our error. The Daily  
reserves the right not to print any classi-  
fied ad.

## HELP WANTED

**Subjects Needed:** Women studying at  
McGill for next 2 years to participate in  
Research study on "Persistent Human  
Papilloma Virus." Virus is linked with devel-  
opment of cervical cancer in some women.  
Financial incentive offered. For info, call:  
Gail Kelsall, Research Nurse, 398-2915/  
6926 e-mail: gailk@oncology.lan.mcgill.ca.

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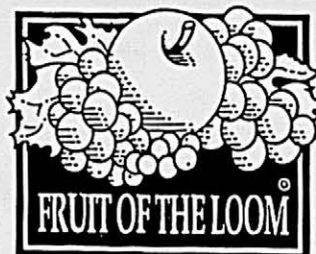


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Inquiries:

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## Daily Publications Society Annual General Meeting (AGM)

Tuesday December 2, 1997

4:00 pm to 6:00 pm

The Student Center

3480 McTavish

(Shatner B9/B10)

The Election of Directors to the  
Daily Publications Society 1998-99 Board of Directors  
will take place at the AGM

Nominations open November 12

Nominations close November 25

Nomination Kits will be available at The McGill Daily offices room B07  
and B03 from November 12 to November 25

Candidates will be announced between November 25 and December 2

For further information, kindly contact  
Suzanne Williams Chief Returning Officer (CRO)  
Daily Publications Society, at 398-6790 or 398-6784





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Monday, November 17 & Monday, November 24

(A women-led panel discussion will follow the November 24th lecture)

7:45 pm

Montreal Torah Center, Decarie Square, 6900 Decarie Blvd., Suite 217  
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Daycare Referendum



First Year Elections

# Make Your Mark!

## 11-12-13 November

Bronfman, Leacock, Redpath, Shatner and Stewart: 10am-5pm  
McConnell: 10am-5:30pm BMH and RVC: 10am-6:30pm